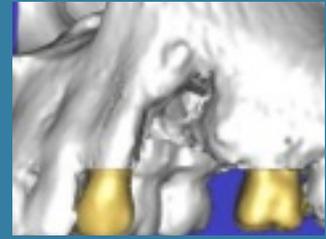


# Regenerate Missing Bone for Implants



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You've lost several teeth, and you want to replace them with dental implants. But you are told "***there is not enough bone.***" Perhaps you suffered an injury to your teeth with significant bone loss resulting in a large defect. Or you had teeth extractions several years ago due to decay, gum disease, or abscess, and the remaining bone is too thin and short for teeth replacement. Maybe you've noticed gradual bone loss from dentures that are becoming loose, difficult to keep in, and are spending a fortune on adhesives. Perhaps you had a cyst that resulted in tooth and bone loss with a defect, or your bridge or denture has a poor fit and doesn't look good.



When teeth are lost or extracted, the bone that previously supported those teeth no longer serves a purpose and begins to deteriorate or resorb. Dentures accelerate the bone resorption process as they put pressure on and compact the gums and underlying bone. As facial structures continue to collapse, the dentures must be relined (made thicker) to compensate for additional bone loss. In a recent nationwide survey sponsored by the Institute for Dental Implant Awareness, only 36 percent of the respondents were aware that bone loss resulted from missing teeth. Additionally, 75 percent of respondents with bridges, partials, or dentures would have changed their minds about these treatment options if they had known about the bone loss/deterioration that would occur.

Bone loss may also result from gum disease, infection, traumatic injuries, or cysts. The result is deformities of the jaw bone and gum tissues, leaving inadequate support for tooth replacement and cosmetic problems.

You certainly don't have to live with such difficulties surrounding your teeth. Nor do you have to cope with dentures and oversized bridges that compromise your life style. Today, there are great solutions. Missing bone can be augmented by grafting procedures that recreate normal shape and dimensions and make replacement with dental implants possible. You may be wondering if bone grafting is safe, how it is performed, and where the grafting material comes from. Other common concerns include success rate, recovery, and what complications may result. Here are some answers and information to help you make a good decision about your particular problem.

## What is the purpose of bone grafting?

Patients with tooth and bone loss can suffer greatly from both functional and cosmetic problems. Conventional tooth replacement options, such as bridges or dentures, are often inadequate for chewing, talking, and certainly for an acceptable smile. Bone grafting replaces and augments missing bone and supports teeth in a natural way. Grafting promotes the long-term success of dental implants, cosmetic results, hygiene, and the longevity of your teeth.

## Types of Bone Grafting

### Extraction site bone graft

Procedures to regenerate missing bone can begin at the same time as tooth removal. Many times, if an implant cannot be placed immediately at the time of surgical removal of the tooth, a graft using bone from another area of the mouth, or synthetic bone, can be placed into the tooth socket. This graft will help to facilitate healing, provide bone for secondary implant placement, and preserve a significant amount of the gum tissue that would normally shrink during healing if the socket were allowed to collapse. Many times, a collagen membrane is placed to protect this graft during healing. These membranes may dissolve on their own or they

Preservation of bone in extraction site results in ideal tissue form



may be removed later during the healing process if they do not dissolve.

If small defects are found following surgical tooth removal in areas where implants are to be placed, a graft using real or synthetic bone material can be used to fill in the defect. Since gum tissue grows faster than bone (and will in essence invade the bone graft causing it to shrink) a thin collagen membrane is used to

cover the graft to prevent the gum tissue from growing into the area.

The bone replacement can usually be accomplished at the same time as dental implant placement, so no additional surgeries are necessary. This type of bone graft takes the same time to heal as it takes for the bone to remodel around the implant after it has been placed.

If a non-dissolving membrane is used, it is removed when the implant has bonded to the jaw bone and the healing cap is placed. Some of the newer materials dissolve during the healing process and do not need to be removed.

### Horizontal bone grafting

This is performed when the bone is too thin to support dental implants. Bone grafting increases the width and allows proper positioning of the implants. This procedure involves either an onlay bone against the existing ridge or expansion to increase its width.

An actual block of bone can be obtained from the chin or from the wisdom teeth area and then placed in the area in need. These grafts typically require four to six months to heal and form new bone identical to the shape of the transplanted block. Implants can then be placed securely in this bone. It usually takes another three to four months for the bone to remodel around the implants.

Implants placed in these grafts generally have the same success rates as implants placed in non-grafted bone.



Upper jaw bone loss due to previous extractions



Six months after bone grafting to increase width for implant placement

## Vertical bone grafting

This is performed when the bone is too short, resulting from gum disease, trauma, tooth loss, or due to close proximity of sinuses in back of the upper jaw. Bone grafting increases the bone height to support implants with ideal length and in the ideal position for long-term success. There are various treatment options based on location, degree of bone loss, and amount of bone augmentation needed.

**Sinus lift bone grafting:** Ideal when bone height is inadequate for implants in the back of the upper jaw.

The back of the upper jaw has been a problem for dental implant placement for decades. All of the sinus cavities are located above the teeth and jawbone. They tend to enlarge after tooth loss or removal, leaving very little residual bone for implant placement and stability.

In the early 1990s a technique was discovered that allows the surgical specialist to literally push up the floor of the sinus cavity and add sufficient bone for implant placement. This is accomplished without going into the sinus itself, or changing the way that it functions.

This procedure allows ideal implant placement with success rates equivalent to placement in non-grafted bone. Often, the graft can be done at the same time as implant placement. The implants are then restored (replacement teeth placed) in approximately six months. If very little bone is present to start, the graft will need to be done first, with the implants placed after the initial six months of healing. The implants then need another six months to bond to the newly formed bone before replacement teeth can be placed.

**Onlay graft:** Indicated where there is minor to moderate bone height deficiency at the top of the ridge.



Upper jaw bone loss due to previous extractions



Six months after bone grafting to increase width for implant placement

**Distraction technique:** Used where there is severe loss of bone height. It regenerates bone using a gradual “stretching” technique.

## Where does bone grafting material come from?

Bone-graft material may be a form of calcified granules such as demineralized freeze-dried human bone, bovine bone, or synthetic materials provided in single pre-packed bottles.

Bone may also be obtained directly from the patient. Known as autogenous bone, it is considered the gold standard for bone grafting. Depending on the amount of bone necessary for grafting, it may be harvested from three sources:

- **Ramus (lower wisdom teeth area):** Ideal for augmenting partial areas of bone deficiency
- **Chin:** May be used as a second source if more bone is needed
- **Hip:** Indicated for very large defects where significant amounts of bone are needed. This procedure is performed in a hospital under general anesthesia, and patients often go home the following day. It is a relatively conservative procedure, and patients recover remarkably well and quickly.

## How does bone grafting heal?

Bone material is placed and then covered with a protective resorbable membrane. The bone graft material acts as a matrix or scaffold and is gradually replaced by your own regenerative bone cells. The new bone heals and matures in about four to six months. Dental implants placed in these grafts generally have the same success rates as implants placed in non-grafted bone.

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## Is bone grafting safe?

Bone grafts such as freeze-dried bone, bovine bone, and other synthetic materials have a long history of safety and do not carry risks of disease transmission. Any bone obtained from a patient for their own surgery is also very safe and offers the best type of bone for implant placement.

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## How successful is bone grafting?

Bone grafting is safe and predictable and complications can be avoided when the procedure is performed by a trained, skillful, and experienced oral surgeon using specialized instruments and techniques, proper tissue handling, recipient site preparation, and patients that adhere to important post-operative instructions. Dr. Kazemi specializes in bone grafting and tissue regeneration procedures and has performed them successfully on thousands of patients. The office is designed and equipped for bone grafting and dental implant procedures, and the team assisting Dr. Kazemi is specially trained. Methodical, exacting, and detailed protocols are followed strictly to make sure every patient is safe and has a pleasant experience. The fact is, regenerating lost bone is highly achievable with extensive clinical and scientific experiences to support it.

## What are growth factors and how do they benefit in bone grafting?

Growth factors are proteins that are derived either from a patient's own blood or produced using recombinant technology (rhMBP-2). When added to a bone graft or site of surgery, they promote healing of bone and soft tissue. Many studies have shown enhanced bone growth and quality as well as faster healing of the overlying soft tissues. Growth factors are highly concentrated in platelets. Dr. Kazemi has used growth factors in bone regeneration therapy for years with excellent results. They are safe, easy to obtain with our own specialized machine, and allow faster and better healing of the bone and soft tissues.



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## What are the possible complications?

Complications are rare but may include infection or opening of the overlying gum tissue and subsequent bone exposure (known as "dehiscence"). Exposure of bone during healing can lead to partial or complete loss of grafted bone. Nerve disturbances are remotely possible if the surgery site is in close proximity, but it often resolves in a few weeks.

Smoking, chewing hard food following surgery, and inadequate oral rinses can lead to inflammation, infection, or opening of gum tissue thus compromising healing.

Therefore patient compliance during the recovery period is very important to success. Proper diagnosis along with meticulous surgical techniques minimize the risks and complications.

## What type of prosthesis can I wear during healing?

A transitional prosthesis replacing the missing teeth may have been prepared by your dentist. Following the bone grafting procedure, the prosthesis may be placed with minor modifications to avoid pressure on the graft. As it heals, the prosthesis may be further adjusted to improve fit and stability until your permanent teeth are placed.

## How long before I can have dental implants and teeth?

Dental implants may be placed four to six months following a grafting procedure. Depending on implant location and type of grafting, temporary teeth may be placed at time of implant placement, several weeks later, or after two to four months of healing.

## Who is the right dentist for bone grafting and dental implants?

Bone grafting and teeth replacement with dental implants require the collaborative efforts of a surgeon, a restorative dentist, and a dental laboratory. Bone grafting and implant placement are highly skilled disciplines, best performed by oral surgeons who are well-trained and perform this procedure daily. Dr. Kazemi specializes in bone grafting and has performed it successfully on thousands of patients. The prosthetic aspect (crown, bridge, etc.) is performed by your restorative dentist who may be a general dentist or a prosthodontist, a specialist trained in more complex aesthetic and reconstructive restorative dentistry.

## Managing your anxiety

Anxiety is not uncommon among those having oral surgery. This anxiety is mostly related to hearing of others' bad experiences with excessive pain, swelling, and complications. We resolve this in several ways. First, the use of IV sedation allows patients to nap during the surgery. This helps greatly to make them comfortable and reduce anxiety. Second, patients will be cared for by a group of professional staff members who take the time to personally connect with each patient and allay their fears and concerns. Third, the surgery is done conservatively, which minimizes or avoids swelling, pain, and complications.

## What is the best anesthesia option for bone grafting? Is it safe?

The best way to manage anxiety and make sure you have the best possible experience is to opt for IV sedation. It is the most recommended anesthesia for grafting procedures and chosen by many patients. Dr. Kazemi is trained and licensed in administering office anesthesia. Its safety is attributed to continued monitoring techniques, the short-acting nature of the medications, the availability of emergency equipment, and, most importantly, the proper training of the surgeon and the staff. Other options are local anesthesia or nitrous oxide (laughing gas) but with either, the patient is completely awake and fully aware of the procedure.

IV sedation is a very safe and predictable procedure in healthy patients when administered by an experienced clinician with proper training and accepted protocol. The patient is continually monitored during anesthesia and emergency equipment is kept on hand. The medications used have a long history of safety and are short-acting. Anesthesia is also safe in patients with respiratory problems or cardiovascular disease, provided that precautions are taken. To avoid possible airway compromise, patients with severe upper respiratory compromise, such as severe cold with stuffy nose and productive cough, are asked to postpone the surgery until they feel better.

Our facility is equipped with emergency equipment and medications, and the entire team is trained to manage any possible complications quickly and properly. The surgeon is CPR and ACLS certified and can effectively and quickly manage any complications that arise. Suburban Hospital is in close proximity in the event additional assistance is required.

## How soon can I return to work, school, or normal activities?

Most patients return to work, school, or some normal activities one to two days after surgery. Most schedule their surgery on a Friday and are ready to return to work or class by Monday. There is no problem with traveling or flying the following day, although it's best to rest for a day or two. Of course, there are always variations in overall response and recovery.

## What is the expected recovery?

- **Pain:** The level and duration of pain depends on the complexity of the surgery, technique, and patient's tolerance. Most patients experience three to four days of elevated pain, commonly managed with pain medications such as Vicodin or Percocet. As pain gradually diminishes over the next two to three days, ibuprofen (Advil) or acetaminophen (Tylenol) can be used. After seven to ten days, most patients no longer have pain and may stop their medications.
- **Swelling:** Any swelling related to surgery will maximize in 36 to 48 hours following procedure, and gradually taper over the next five to seven days. Ice helps to reduce swelling in the first 24 hours. If extractions were done in a conservative fashion, a patient may experience no swelling at all.
- **Diet:** Upon arrival home, patients may have water, juices, soups, shakes, purees, and very soft foods. A soft diet is recommended for up to five to seven days. No hard, crispy, or spicy food should be eaten during this period. The general rule is: if you have to chew, it's probably too hard. After seven days, patients may gradually return to normal food.
- **Activity:** Get plenty of rest on the day of surgery. Some patients may feel well enough the following day to walk and go out. That's alright, but take it easy. Avoid strenuous activities for the first two to three days. Refrain from sports, lifting, or doing anything that requires exertion. After three days, if patients feel more comfortable, they can walk, go for a gentle swim, or do very low-impact exercise. Mild activities may cause some pain but not enough to disturb the surgery site or open the sutures.

# Planning Your Visit

## Planning the procedure around your schedule:



We understand that taking time off work or school for procedures may be challenging. Therefore, we will arrange your appointments in a way that offers efficiency and minimizes your time spent in our office. For treatments involving grafting and dental implants, we recommend a consultation appointment first. During this visit, we will complete an examination, take necessary diagnostic X-rays, and discuss treatment options and various stages. Our financial coordinator will meet with you to discuss fees and payment options. Following the procedure, you may have one or two follow up appointments. As a convenience, prescriptions are available right in our office. We offer a flexible appointment schedule, Monday through Friday between the hours of eight and five, and early morning or late-day appointments per special arrangements. Weekend appointments are available with our VIP and presidential service packages and can be reserved per special arrangements.

## What your escort can do during your procedure:



Your loved ones can relax in our lounge and enjoy a cup of tea or coffee and read a wide selection of magazines. Or take advantage of our free Wi-Fi computer lounge to check emails and browse the internet on either your computer or ours. They may also take a stroll on Bethesda Avenue and visit the many stores, coffee shops, and restaurants. We'll call them when procedure is complete so they can return to office and join you in the

recovery room.

## Information that we need prior to the procedure:



- Patient registration form, medical history, and signed HIPAA forms. All forms may be completed online or sent by fax prior to your visit.
- Referral form from your dentist indicating the recommended teeth to be replaced with dental implants and other treatments.
- Panoramic X-ray done within the past six months sent by your dentist electronically or given to you to bring. If you don't have a panoramic X-ray, you can obtain one in our office. If a CT-scan is necessary, we will refer you

to a nearby center.

## What are the cost, payment options, and insurance protocol?



The cost depends on the type of bone grafting, location, amount of grafting, number of dental implants, and your choice of anesthesia. Following examination and discussion of treatment recommendations, our financial coordinator will present the exact cost and payment options to you. We offer short- and long-term payment plans. Dental implants are typically not covered by dental insurance. Those with insurance may choose to pay the surgical fees and receive

## About Dr. H. Ryan Kazemi



**Dr. H. Ryan Kazemi** is an oral and maxillofacial surgeon certified by the American Board of Oral and Maxillofacial Surgeons. He received his dental degree from the University of Pennsylvania, School of Dental Medicine in 1990. Following a one-year internship at the Albert Einstein Medical Center in Philadelphia, he pursued surgical training at The Washington Hospital Center in Washington, DC, where he received his certificate in Oral and Maxillofacial Surgery. Dr. Kazemi has practiced in Bethesda, Maryland, since 1997, providing a full spectrum of oral and maxillofacial surgery procedures with emphasis on extractions, dental

implants, bone grafting, and corrective jaw surgery.

Dr. Kazemi is a diplomat of the American Board of Oral and Maxillofacial Surgeons, and an active member of the American Association of Oral and Maxillofacial Surgeons, American College of Oral and Maxillofacial Surgery, Academy of Osseointegration, American Dental Association, and Entrepreneur Organization.

He has served as the founder and president of several dental and implant study clubs in the Washington, DC, area. Dr. Kazemi has published and lectured extensively on dental implants, bone grafting, and practice management. His newsletter, *To-The-Point* is read by more than 2000 dentists every month. He is also the founder of DDSForums.com, a professional networking site for dentists.

Dr. Kazemi serves on the medical staff for D.C. United, the major league soccer team in Washington, DC, and the US National Soccer team for the care of their athletes.

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### What sets us apart:

- Treatment by board-certified oral surgeon
- Predictable results
- Speedy recovery
- Flexible scheduling
- On-time appointments
- Safe and comfortable atmosphere
- Warm and personable service
- Quick access and response when you need us



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